BLUE ROCK
ENVIRONMENTAL, INC.

Mr. Mark Verhey
Humboldt County Health Department
Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

July 28, 2006

Re: Response to HCDEH Letter dated June 12, 2006 &
Workplan for HDPE Test
Elliott's Service Center
761 Eel River Drive, Loleta CA
HCDEH LOP No. 12210
Blue Rock Project No. NC-2

Dear Mr. Verhey,

Thank you for your comments to Blue Rock Environmental, Inc.'s (Blue Rock's) *Second Quarter 2006 Groundwater Monitoring Report* in the Humboldt County Division of Environmental Health's (HCDEH's) letter dated June 12, 2006. This letter responds to comments and/or questions included in the HCDEH letter. For the ease of review, individual comments/questions are cited (in italics) and responded to below. We hope this letter addresses your questions and concerns.

HCDEH letter dated June 12, 2006 - Comment 1
"Monitoring Well Number Four (MW-4) recently recorded 15,000 ppb total petroleum hydrocarbons as gasoline (TPHg). A plot of concentration versus time for MW-4, using the data subsequent to the excavation, supports a conclusion of a persistent source (attachment one). The data from MW-9 shows an increasing trend for TPHg with time since the excavation. This indicates an unstable or migrating plume boundary. MW-9 is the distal monitoring well."

- *"In the subject report, Blue Rock concludes the vertical and lateral extent of sorbed phase gasoline hydrocarbons is well understood. Following the remedial excavation, Blue Rock estimated only 21 pounds of hydrocarbons remain in soil. The measured concentrations in water during the last approximately two years since the excavation suggest these previous conclusions are inaccurate."*

HCDEH letter dated June 12, 2006 - Comment 2
"We understand the recommendation from Blue Rock is to perform temporary "hot spot" remediation using a mobile High Vacuum Dual Phase Extraction (DPE) system. We understand the proposed extraction points include MW-2, MW-4, MW-9, and MW-10. We understand the proposal is to operate for a time period of approximately 28 days. We have the following questions, observation, and recommendations. Please send a response no later than July 30, 2006"

- *"The DPE system is a vacuum extraction system. Consequently, the data needed to evaluate its potential effectiveness includes information on the concentrations of contaminants in soil. Collecting soil samples and submitting those samples to the laboratory is the method of previous investigation at the location of the proposed extraction points. The results indicate a soil sample from MW-4 was below the detection limit (non-detect or ND) for TPHg at 10 ft below ground surface (bgs). Similarly low values were reported for soil samples collected in the locations of MW-2 and MW-9. MW-10 was the only location of all the proposed extraction points where analytical results indicated a TPHG concentration in soil in excess of 100 ppm. This data suggests a vacuum extraction system will have little effect on observed contaminants since there were only low concentrations observed in the proposed extraction areas. However, the water data indicates a persistent source exists.*

- *"We recommend a workplan be prepared for collecting soil samples in the area of the suspected source. Has the area of the former pump islands been investigated to a level of detail necessary to evaluate it as a potential source?"*

- *Alternatively, we recommend conducting a pilot test, for a period no longer than five days. Based on the measured values of concentration in the vapor column during the pilot test, it may prove to be a viable remedial strategy. Currently, there is insufficient analytical data to warrant a prolonged DPE extraction system in the areas proposed. We do not concur the vertical and lateral extent of sorbed phase gasoline hydrocarbons is well understood. Please develop relationship between observed contamination in water and soil. For example, the monitoring well with the highest concentrations in water is non-detect in soil. Where is the source, what depth, what concentrations, that is adding contaminants to the groundwater in the area of MW-4? We do not concur with a 28 day vacuum extraction system located where previous data recorded non-detect for soil samples."*

Blue Rock concurs with the HCDEH that groundwater data indicate a persistent source. Groundwater can be used as a proxy for soil contamination. Although soil samples from some of the groundwater impacted wells did not show high levels of soil impact, the consistent impact to groundwater in those wells indicates that groundwater is in contact with residual soil contamination at levels high enough to source ongoing water contamination. The lack of association between soil and groundwater data at some sample points might be explained by the fact that only one soil sample was collected from those locations. For example, the soil sample from MW-4 was collected at 10 ft bgs and all analytes were non-detect, but groundwater levels fluctuate mostly between approximately 11 and 16 ft bgs. If additional soil samples were collected below 10 feet bgs in MW-4, they would have likely shown soil concentrations sourcing the continued groundwater impact in that well. It is appears that residual soil contamination is

present across the site in this zone of water table fluctuation, as evidenced by proxy of dissolved-phase concentrations detected in wells MW-2, MW-4, MW-9, and MW-10.

Although TPHg concentrations in MW-9 do appear to increase with time since the excavation, considerations of the affect of groundwater elevation on dissolved-phase contaminant levels must be taken into account. As discussed in previous reports, there is a strong relationship between groundwater elevations and dissolved-phase contaminant concentrations at this site (i.e. contaminant concentrations rise when groundwater elevations rise and concentrations decline when groundwater elevations decline). For example, there is a strong positive linear relationship between Groundwater Elevations (ft MSL) and the log of TPHg (µg/L), as shown on Chart 1. This phenomenon is also demonstrated by plotting Groundwater Elevations (ft MSL) and log of TPHg (µg/L) against time (Chart 2). Blue Rock interprets these data to indicate that TPHg concentrations are relatively stable when groundwater elevations are taken into account. Blue Rock is of the opinion that an unstable plume edge at MW-9 would be indicated by TPHg concentrations increasing out of synchronization with groundwater elevations; however, that does not appear to be the case (Chart 2).

The positive relationship between increases of TPHg and groundwater elevations also suggests a source of sorbed-phased TPHg located within the zone of groundwater elevation fluctuation (i.e. ~11 – 16 feet bgs). This zone is partially dry and partially submerged throughout the hydrologic cycle. In the fall, when groundwater elevations are at their lowest (i.e. >15 feet bgs), conditions should be optimal for vapor extraction (via HDPE) to affect the greatest unsaturated column of soil for contaminant recovery. Additionally, groundwater will be vacuum extracted by the HDPE unit, thereby maximizing potential vapor flow from the test wells.

The area of the dispenser island has been characterized by data from previous boring B-8 and the excavation sidewall sample SW-5@10'. Both sample locations are located within 4 feet of the downgradient side (west) of the dispenser island. Boring B-8 was drilled in 1996, and samples from 3 and 6 feet bgs contained TPHg at 200 and 240 mg/kg, respectively. The sample SW-5@10' contained 150 mg/kg TPHd, 75 mg/kg TPHg, and 0.1 mg/kg MTBE. Excavation was completed immediately to the north, west, and south of the dispenser island to depths between 10 – 15 feet bgs. The excavation to west of the dispenser island removed contamination detected in B-8, but the B-8 results suggest that the dispenser was a former source.

Blue Rock recommends delaying proposals for additional investigation east of the dispenser island until after the results pilot testing are known. If the east side of the dispenser island is not within the calculated radius of influence of the tested wells, it may be more advantageous to install a well, for potential extraction purposes, in lieu of a temporary boring in that area.

During a telephone discussion in mid-July, the HCDEH and Blue Rock agreed to start with a 5-day HDPE pilot test. If, during the 5-day test, it is evident that gasoline compounds are being removed from the subsurface at significant concentrations, the test may be extended to 28 days, with the concurrence of the HCDEH.

Workplan for HDPE Test

Purpose

Blue Rock proposes to perform a HDPE test in order to determine potential process flowrates, contaminant recovery rates, and area of influence. HDPE testing equipment and methodology specific to the proposed test are described and explained below. Because pilot studies are investigatory in nature, in order to be of most value, testing will need to be flexible to adjust to results as they are experienced in the field.

Air Permitting

Applicable permits will be obtained, if needed, from the Air Pollution Control District (APCD) before testing occurs. The APCD will be provided with any requested information related to test procedures and process stream treatment.

HDPE Equipment

A mobile HDPE unit will be mobilized to the site. The unit is truck mounted and consists of liquid-ring pump capable of producing 29-inches Hg vacuum and a thermal oxidizer capable of treating an air flow of 150 scfm at 20-inches Hg. An onboard electric generator powers the equipment and onboard propane tanks provide supplemental fuel for the thermal oxidizer. A unit intake hose will be connected to the well through a vacuum cap attached to the wellhead.

An OVM will be used to monitor influent air concentrations. A flow sensor will measure process air stream volumetric flow and a separate flow meter will record gallons of water pumped. Extracted water will be stored in a 5,000-20,000 gallon above-ground storage tank to be mobilized to the site.

HDPE Test Procedures

Blue Rock proposes to use wells MW-2, MW-4, MW-9, and MW-10 as test wells, both individually and in combination. These wells are located in areas of persistent dissolved-phase impact, which suggests the presence of residual soil impact sourcing the observed groundwater concentrations. The test well configuration will remain flexible, and extraction will be focused on wells producing gasoline hydrocarbon vapors based on the readings from a calibrated organic vapor meter (OVM).

All of the surrounding wells, without occluded screens, will be utilized for soil vapor vacuum radius of influence monitoring, and all wells will be used for groundwater drawdown monitoring. Prior to initiating test extraction, all monitoring wells will be opened and allowed to equilibrate. The initial depth to water readings will be collected using a water sounder. Vacuum caps will then be attached to the wells and background vacuum or pressure readings will be collected.

A stinger hose or pipe will be lowered into each test well through a vacuum tight cap. The stinger end will be placed several inches into the static water. The HDPE unit will be engaged and testing will begin. Water and vapor (dual phases) will be extracted simultaneously by the high vacuum produced by the liquid-ring pump. If well recharge is slower than the water

pumping rate, the test well can be dewatered. If dewatering appears to be occurring, the stinger intake will continued to be lowered into the well until near well bottom, thereby maximizing the amount of screen exposed for vapor extraction.

HDPE testing will be proceed over the course of approximately 5 days, at times using a single test well or a combination of test wells. The duration of the test is aimed at dewatering a portion of the uppermost saturated zone to determine how a full fledged system will perform. Field conditions experienced at the time of testing may warrant shortening the test. The test may be extended beyond the initial 5-days to a maximum of 28-days if data indicate that gasoline is being removed from the ground at significant rates.

During the first day of the test, extraction data will be collected at least hourly. Extraction data collected will include: applied vacuum, water pumping rate, process air flow rate, and field monitoring of hydrocarbon concentrations in process air using an OVM. On the first test day, vacuum influence and depth to water data will be collected from the surrounding monitoring wells on an hourly basis. If conditions allow, the HDPE unit will be run overnight between test days, although only limited data will be collected during nighttime operations. As testing progresses data collection intervals will likely be lengthened.

Extracted water will be separated by a water knockout and transferred to a holding tank pending profiling and disposal. Extracted air will be routed through the thermal oxidizer to thermally destroy entrained hydrocarbon vapor. A schematic of the test set-up is included in Figure 1.

Collection of HDPE Test Process Water and Soil Vapor Samples

On a daily basis, one influent air sample and one mid-fluent water sample will be collected for laboratory analysis from the respective process streams of the high vacuum unit. The water sample should be considered a mid-fluent sample because it will have been partially stripped of dissolved hydrocarbons by the HDPE process. Theoretically, the stripped hydrocarbon contaminant mass will be accounted for in the air sample results. The air samples will be collected into 1-liter tedlar bags and the water samples will be collected into preserved 40-milliliter VOA bottles. The samples will be labeled, documented on a chain-of-custody form, placed on ice in a cooler (water samples) or in a dark container (air samples), and transported to a licensed analytical laboratory.

Laboratory Analyses of Water and Soil Vapor Samples

The air and water samples will be analyzed by a DHS-certified laboratory for:

- TPHg by EPA Method 5030/8260B
- BTEX by EPA Method 8260B
- MTBE by EPA Method 8260B

Management of HDPE Testing Derived Water

The HDPE test derived water will be chemically profiled for disposition. If possible, a temporary discharge permit with be obtained from the locally owned public treatment works, or the water will be transported off-site to an appropriate wastewater treatment facility for disposition.

Proposed Reporting

The results of the pilot testing will be used to prepare a report. The report will presents the methods of testing/investigation, results, and conclusions. The report will be supported by data presented in graphical and tabular form. The report will be prepared under the supervision of, and stamped by, a California Professional Geologist at Blue Rock. Required GeoTracker uploads will be made.

Proposed Schedule and Reporting

The following table provides a general schedule for implementation of work proposed herein.

Key Activity	Estimated Date
Submit this workplan	July 28, 2006
Receive HCDEH Approval	August 28, 2006
Perform HDPE Test	September 20, 2006
Prepare Report	November 15, 2006

Project Status

- The site is currently being monitored on a quarterly basis per the HCDEH directives. The next quarterly sampling event is scheduled for August 2006. Groundwater samples will be analyzed for TPHg, BTEX, and MTBE.

- Blue Rock recommends performance of a 5-day HDPE pilot test (with potential expansion to 28-day test if contaminant recovery is favorable) in September 2006.

- Blue Rock has proposes to delay preparation of additional investigation workplan until the results of the pilot test are known.

Closing

This letter was prepared by, and under the supervision of, a California Professional Geologist at Blue Rock. All statements, conclusions, and recommendations are based upon published results from past consultants, field observations by Blue Rock, and analyses performed by a state-certified laboratory as they relate to the time, location, and depth of points sampled by Blue Rock. Interpretation of data, including spatial distribution and temporal trends, are based on commonly used geologic and scientific principles. It is possible that interpretations, conclusions, and recommendations presented in this report may change, as additional data become available and/or regulations change.

Information and interpretation presented herein are for the sole use of the client and regulating agency. The information and interpretation contained in this document should not be relied upon by a third party.

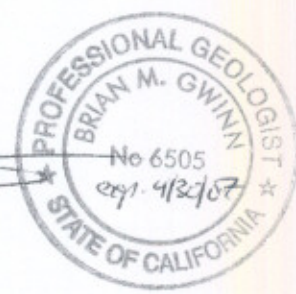
The service performed by Blue Rock has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

If you have any questions, please contact Mr. Scott Ferriman at (707) 441-1934.

Sincerely,
Blue Rock Environmental, Inc.

Scott Ferriman
Project Scientist

Brian Gwinn, P.G.
Principal Geologist



Attachments:

- HCDEH letter dated June 12, 2006
- Figure 1 – High Vacuum Dual-Phase Extraction Pilot Test Schematic
- Chart 1 – MW-9 Log TPHg vs. Groundwater Elevations
- Chart 2 – MW-9 TPHg & Groundwater Elevations vs. Time

Distribution:

- Ken Elliott, P.O. Box 54, Hydesville, CA 95547
- Betty Kinoshita, US Bank, P.O. Box 3108, Portland, OR 97208-3108

Humboldt County Department of Health and Human Services
DIVISION OF ENVIRONMENTAL HEALTH
100 H Street - Suite 100 - Eureka, CA 95501
Voice: 707-445-6215 - Fax: 707-441-5699 - Toll Free: 800-963-9241
envhealth@co.humboldt.ca.us

June 12, 2006

FILE COPY

Mr. Darrell K. Elliott
PO Box 54
Hydesville, California 95547-0054

Subject: **Elliott's Service Center**
761 Eel River Drive, Loleta, California
LOP #12210

Dear Mr. Elliott:

Thank you for submitting *Second Quarter 2006 Groundwater Monitoring Report*, prepared by Blue Rock Environmental Inc.

Monitoring Well Number Four (MW-4) recently recorded 15,000 ppb total petroleum hydrocarbons as gasoline (TPHg). A plot of concentration versus time for MW-4, using the data subsequent to the excavation, supports a conclusion of a persistent source (attachment one). The data from MW-9 shows an increasing trend for TPHg with time since the excavation. This indicates an unstable or migrating plume boundary. MW-9 is a distal monitoring well.

- In the subject report, Blue Rock concludes the vertical and lateral extent of sorbed phase gasoline hydrocarbons is well understood. Following the remedial excavation, Blue Rock estimated only 21 pounds of hydrocarbons remained in soil. The measured concentrations in water during the last approximately two years since the excavation suggest these previous conclusions are inaccurate.

We understand the recommendation from Blue Rock is to perform temporary "hot spot" remediation using a mobile High Vacuum Dual Phase Extraction (DPE) system. We understand the proposed extraction points include MW-2, MW-4, MW-9, and MW-10. We understand the proposal is to operate for a time period of approximately 28 days. We have the following questions, observations, and recommendations. Please send a response no later than July 30, 2006

- The DPE system is a vacuum extraction system. Consequently, the data needed to evaluate its potential effectiveness includes information on the concentrations of contaminants in soil. Collecting soil samples and submitting those samples to the laboratory is the method of previous investigation at the location of the proposed extraction points. The results indicate a soil sample from MW-4 was below the detection limit (non-detect or ND) for TPHg at 10 ft below ground surface (bgs). Similarly low values were reported for soil samples collected in the locations of MW-2 and MW-9. MW-10 was the only location of all the proposed extraction points where analytical results indicate a TPHG concentration in soil in excess of 100 ppm. This data suggests a vacuum extraction system will have

little effect on observed contaminants since there were only low concentrations observed in the proposed extraction areas. However, the water data indicates a persistent source exists.

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Please contact Mark Verhey at 707-268-2208 if you have any questions.

Sincerely,

Mark Verhey, Geologist
Humboldt County Local Oversight Program

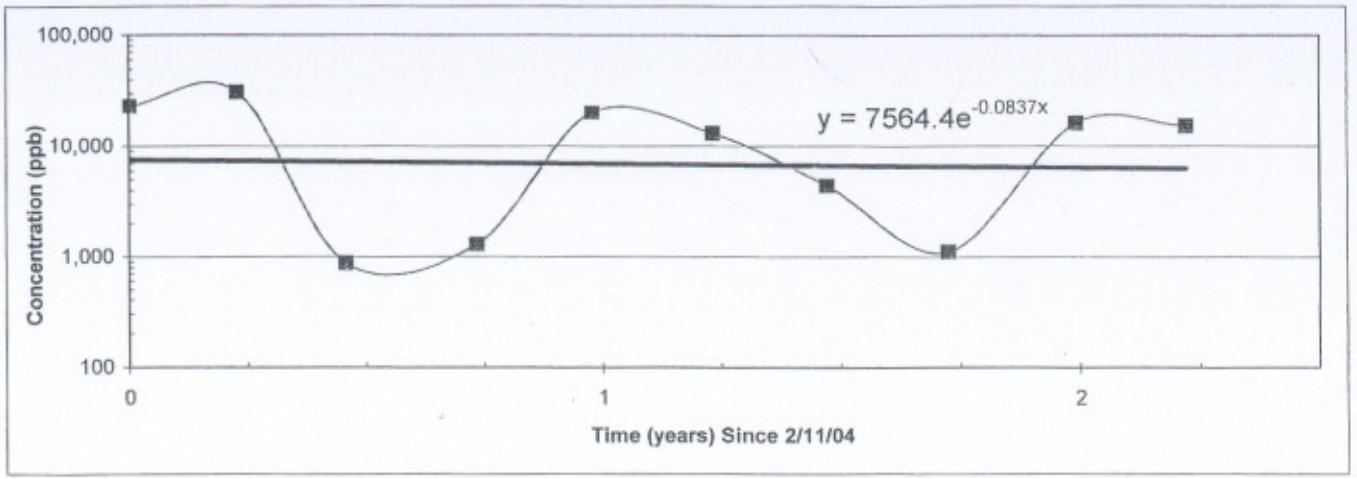
MAV: AR

cc: Brian Gwinn, Blue Rock Environmental, Inc.
Scott Ferriman, Blue Rock Environmental, Inc.
Betty Kinoshita, US Bank

12210.026/ 726L
Attachment One

MW-4

Date	Time since 2/11/2004 (years)	Conc TPHg
2/11/04	0.001	23,000
5/4/04	0.23	31,000
7/27/04	0.46	870
11/5/04	0.73	1,300
2/2/05	0.98	20,000
5/6/05	1.23	13,000
8/1/05	1.47	4,400
11/1/05	1.72	1,100
2/7/06	1.99	16,000
5/2/06	2.22	15,000



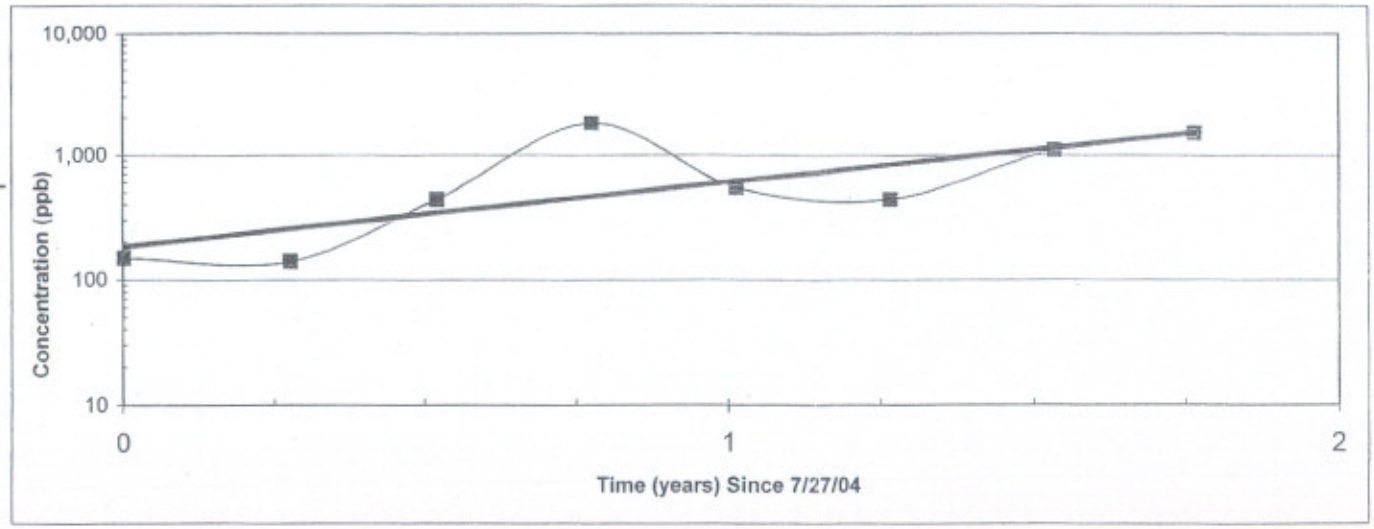
Excavation occurred December 2003

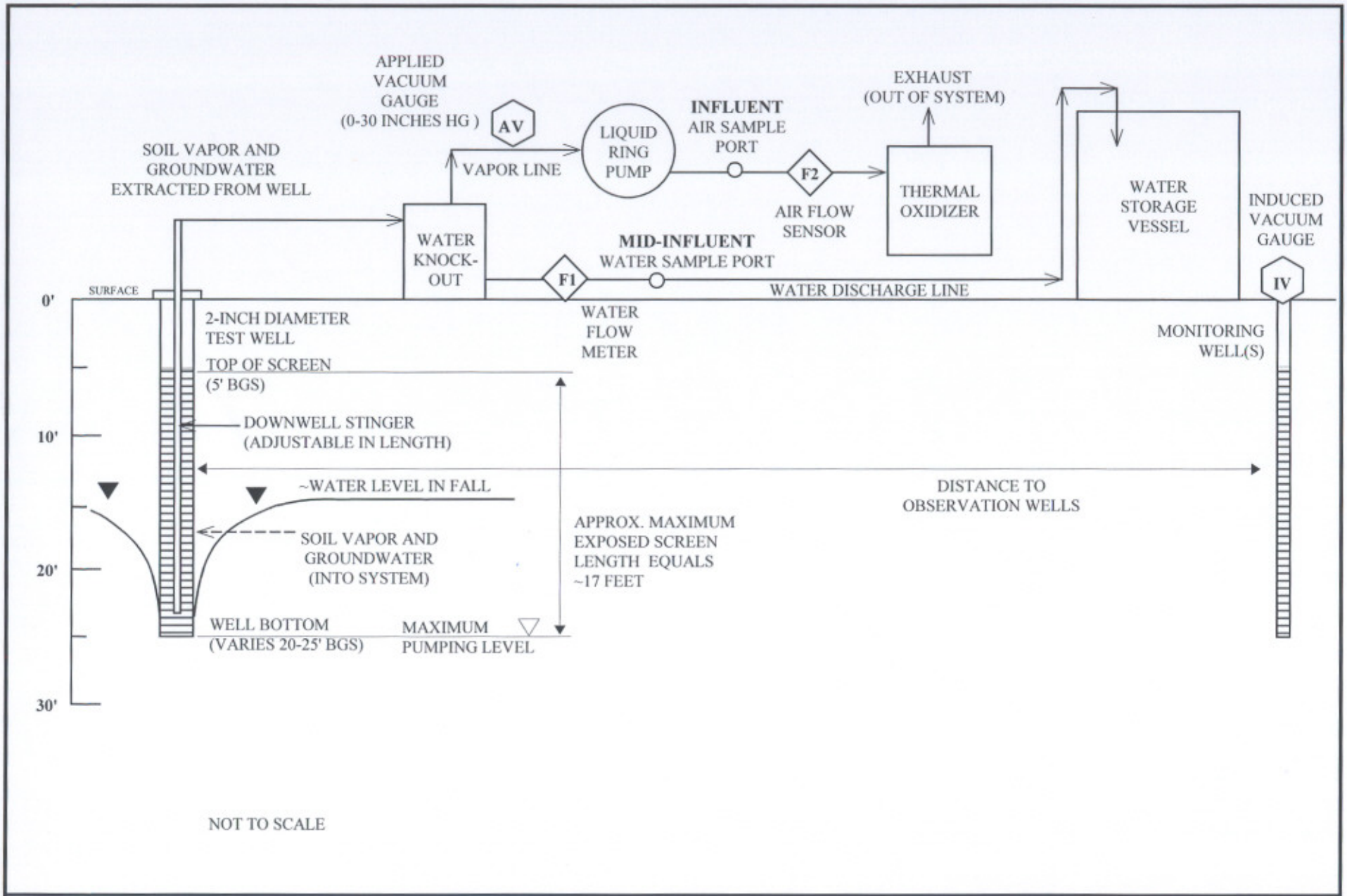
Time: years since 2/11/2004
= -Ln (WQO) / Y intercept) / exponent
WQO = Water Quality Objective

WQO (ppb)	from equation of exponential trendline y-int	exp	Estimated time to reach WQO years since 2/11/2004
50	7,564	0.084	**60**

MW-9

Date	Time since 7/27/2004 (years)	Conc TPHg
7/27/04	0.00	150
11/5/04	0.73	140
2/2/05	0.98	440
5/6/05	1.23	1,800
8/1/05	1.47	550
11/1/05	1.72	440
2/7/06	1.99	1,100
5/2/06	2.22	1,500



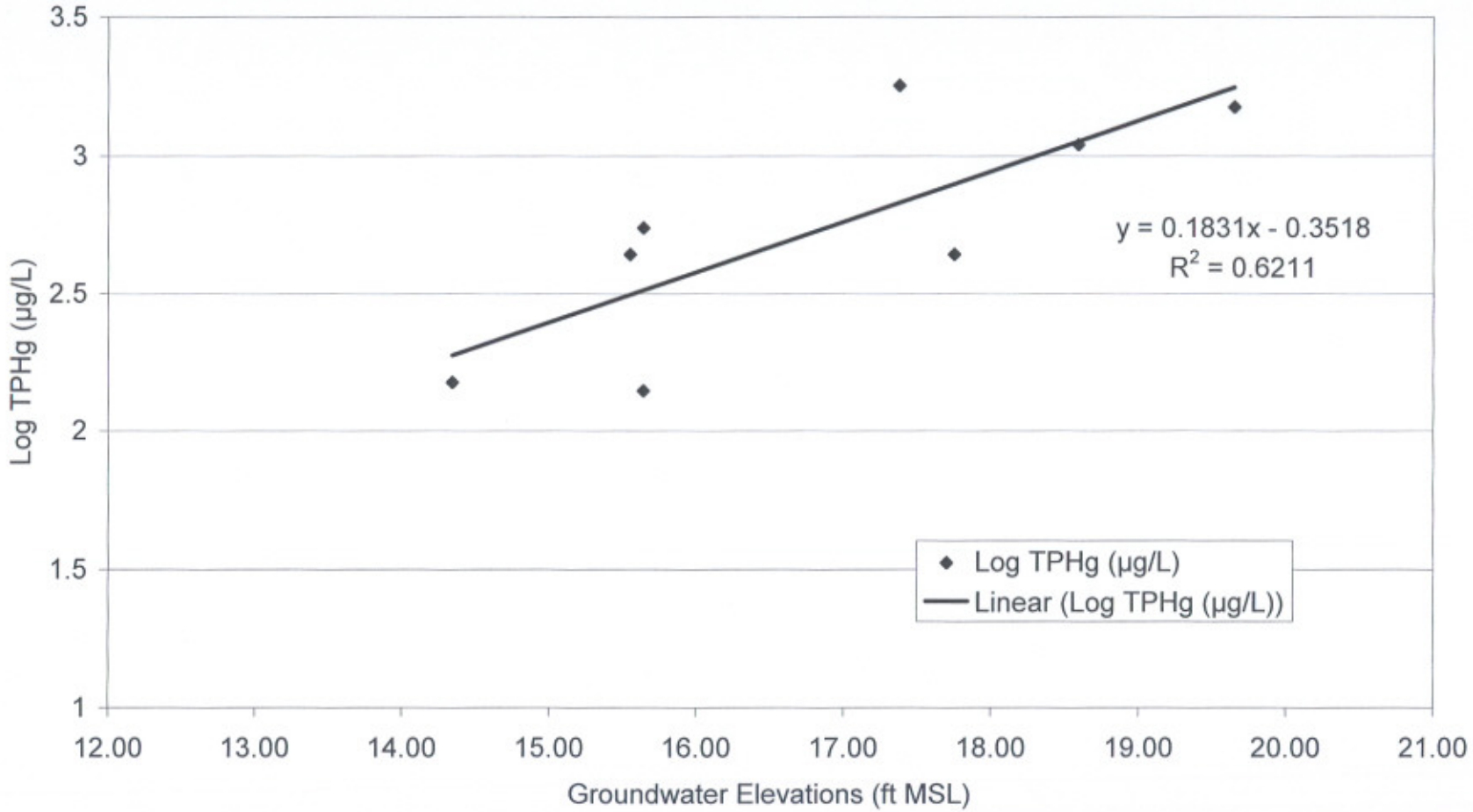


High-Vacuum Dual-Phase Extraction
Pilot Test Equipment Schematic
Elliott's Service Center
761 Eel Dr.
Loleta, California

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Report Date	Figure
NC-2	7/06	1

Chart 1
MW-9: Log TPHg vs. Groundwater Elevations
Elliott's Service Center
761 Eel River Dr., Loleta, CA



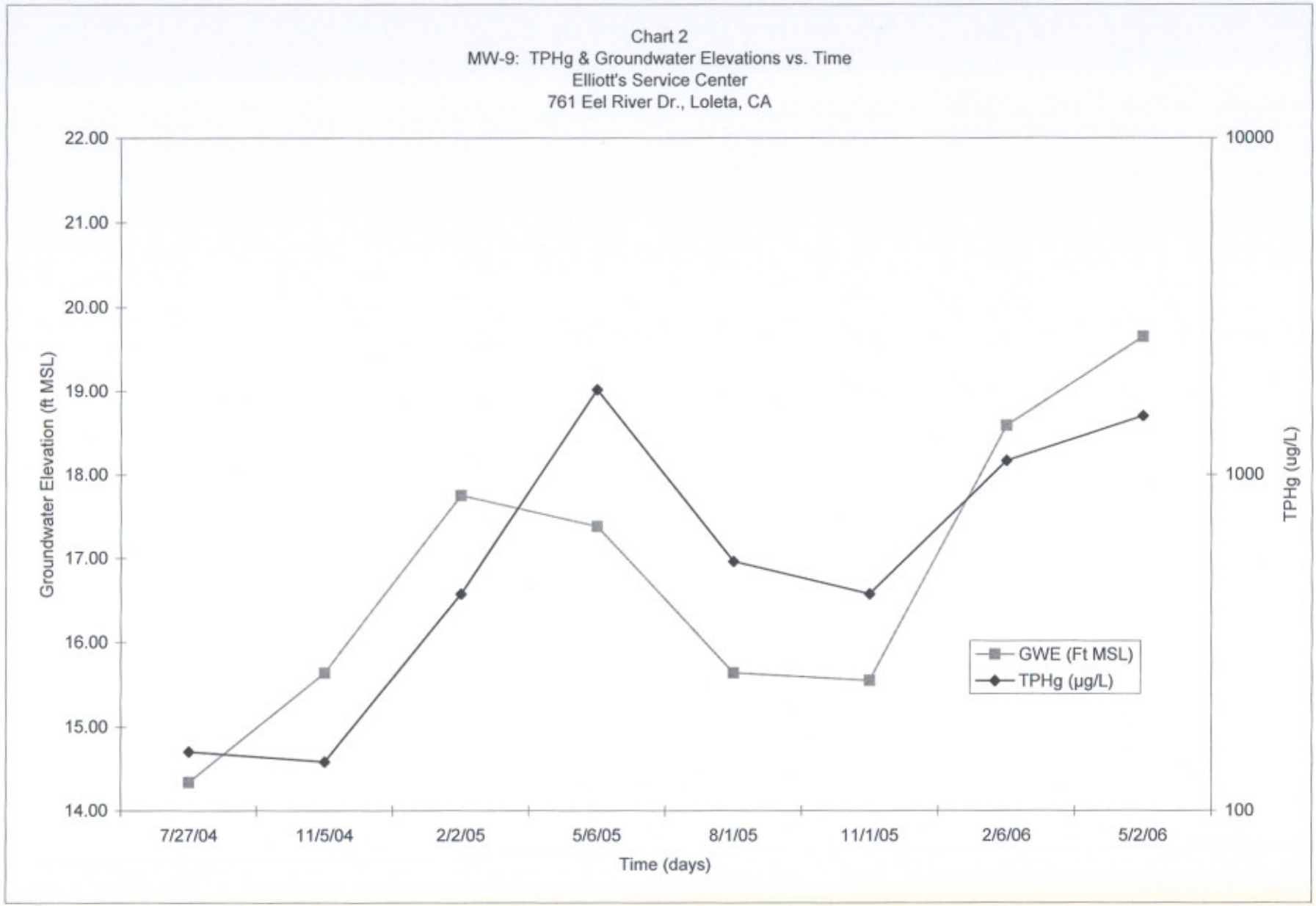


Chart 2
MW-9: TPHg & Groundwater Elevations vs. Time
Elliott's Service Center
761 Eel River Dr., Loleta, CA
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
Groundwater Elevation (ft MSL)
10000
1000
100
TPHg (ug/L)
7/27/04
11/5/04
2/2/05
5/6/05
8/1/05
11/1/05
2/6/06
5/2/06
Time (days)
GWE (Ft MSL)
TPHg (µg/L)